

WHAT IS CLAIMED IS:

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1. An apparatus comprising:

a plurality of upstream buffers each configured to store a plurality of upstream packets, wherein each of said plurality of upstream packets contains an associated identifier; and

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a router coupled to each of said plurality of upstream buffers and configured to receive said plurality of packets;

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wherein said router is configured to route each of said plurality of packets to a given one of said upstream buffers, depending upon the associated identifier.

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2. The apparatus as recited in claim 1 further comprising a plurality of upstream reorder logic circuits, wherein each one of said plurality of upstream reorder logic circuits is coupled to a corresponding one of said plurality of upstream buffers and is configured to determine an order of transmitting each of said packets stored in said corresponding one of said plurality of upstream buffers based on a set of predetermined criteria.

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3. The apparatus as recited in claim 2 further comprises:

a downstream buffer configured to store a plurality of downstream packets, wherein each of said plurality of downstream packets contains an identifier with a corresponding value;

a downstream reorder logic circuit coupled to said downstream buffer and configured to determine an order of transmitting each of said plurality of downstream packets based on said set of predetermined criteria.

5 4. The apparatus as recited in claim 3, wherein said predetermined criteria include:

arrival times of each of said plurality of upstream packets and each of said plurality of downstream packets;

10 transaction types of each of said plurality of upstream packets and each of said plurality of downstream packets.

15 5. The apparatus as recited in claim 1 further comprising a local node bridge circuit configured to translate a peripheral bus transaction into an additional upstream packet and to forward said additional upstream packet upstream.

20 6. The apparatus as recited in claim 5 further comprising a dedicated node stream buffer coupled to said local node bridge circuit and configured to store said additional upstream packet.

7. The apparatus as recited in claim 1, wherein said router is further configured to route upstream packets having associated identifiers with corresponding values to the same upstream buffer of said plurality of upstream buffers.

25 8. The apparatus as recited in claim 1, wherein said router is further configured to route upstream packets having associated identifiers with different values to different upstream buffers of said plurality of upstream buffers.

9. A system comprising:  
a processor;  
5 a bus bridge coupled to said processor; and  
a packet bus device coupled to said bus bridge by a packet bus, wherein said  
packet bus device includes an apparatus comprising:  
10 a plurality of upstream buffers each configured to store a plurality of  
upstream packets, wherein each of said plurality of upstream  
packets contains an associated identifier; and  
a router coupled to each of said plurality of upstream buffers and  
15 configured to receive said plurality of packets;  
wherein said router is configured to route each of said plurality of packets  
to a given one of said upstream buffers, depending upon the  
associated identifier.

20 10. The system as recited in claim 9, wherein the apparatus further comprising a  
plurality of upstream reorder logic circuits, wherein each one of said plurality of upstream  
reorder logic circuits is coupled to a corresponding one of said plurality of upstream  
buffers and is configured to determine an order of transmitting each of said packets stored  
25 in said corresponding one of said plurality of upstream buffers based on a set of  
predetermined criteria.

11. The system as recited in claim 10, wherein said apparatus further comprising:

a downstream buffer configured to store a plurality of downstream packets,  
wherein each of said plurality of downstream packets contains an identifier  
with a corresponding value;

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a downstream reorder logic circuit coupled to said downstream buffer and  
configured to determine an order of transmitting each of said plurality of  
downstream packets based on said set of predetermined criteria.

10 12. The system as recited in claim 11, wherein said predetermined criteria include:

arrival times of each of said plurality of upstream packets and each of said  
plurality of downstream packets;

15 transaction types of each of said plurality of upstream packets and each of said  
plurality of downstream packets.

13. The system as recited in claim 9 further comprising a local node bridge circuit  
configured to translate a peripheral bus transaction into an additional upstream packet and  
20 to forward said additional upstream packet upstream.

14. The system as recited in claim 13 further comprising a dedicated node stream  
buffer coupled to said local node bridge circuit and configured to store said additional  
upstream packet.

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15. The system as recited in claim 9, wherein said router is further configured to route  
upstream packets having associated identifiers with corresponding values to the same  
upstream buffer of said plurality of upstream buffers.

16. The system as recited in claim 9, wherein said router is further configured to route upstream packets having associated identifiers with different values to different upstream buffers of said plurality of upstream buffers.

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17. A method comprising:

receiving a plurality of upstream packets, wherein each one of said plurality of upstream packets contains an associated identifier;

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examining each of said associated identifiers;

routing each of said plurality of packets to a given upstream buffer of a plurality of upstream buffers, depending upon the associated identifier.

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18. The method as recited in claim 17 further comprising determining an order of transmitting each of said packets stored in said given upstream buffer based on a set of predetermined criteria.

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19. The method as recited in claim 18 further comprising:

storing a plurality of downstream packets in a downstream buffer, wherein each of said plurality of downstream packets contains an identifier with a corresponding value;

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determining an order of transmitting each of said plurality of downstream packets based on said set of predetermined criteria.

20. The method as recited in claim 19, wherein said predetermined criteria include:

arrival times of each of said plurality of upstream packets and each of said plurality of downstream packets;

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transaction types of each of said plurality of upstream packets and each of said plurality of downstream packets.

21. The method as recited in claim 17 further comprising translating a peripheral bus transaction into an additional upstream packet and forwarding said additional upstream packet upstream.

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22. The method as recited in claim 21 further comprising storing said additional upstream packet in a dedicated node stream buffer.

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23. The method as recited in claim 17 further comprising routing upstream packets having associated identifiers with corresponding values to the same upstream buffer of said plurality of upstream buffers.

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24. The method as recited in claim 17 further comprising routing upstream packets having associated identifiers with different values to different upstream buffers of said plurality of upstream buffers.